UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/840,164	05/06/2004	Nicolai Koschc	004-9159	7512

66083 7590 05/16/2007
SUN MICROSYSTEMS, INC. c/o DORSEY & WHITNEY, LLP
370 SEVENTEENTH ST.
SUITE 4700
DENVER, CO 80202

EXAMINER	
TECKLU, ISAAC TUKU	

ART UNIT	PAPER NUMBER
2192	

MAIL DATE	DELIVERY MODE
05/16/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	**Application No.** 10/840,164	**Applicant(s)** KOSCHE ET AL.	
	Examiner Isaac T. Tecklu	**Art Unit** 2192	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on _05/06/04_.

2a)□ This action is **FINAL**. 2b)☒ This action is non-final.

3)□ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _1-58_ is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)□ Claim(s) _____ is/are allowed.

6)☒ Claim(s) _1-58_ is/are rejected.

7)□ Claim(s) _____ is/are objected to.

8)□ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)□ The specification is objected to by the Examiner.

10)□ The drawing(s) filed on _____ is/are: a)□ accepted or b)□ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)□ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)□ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)□ All b)□ Some * c)□ None of:

1.□ Certified copies of the priority documents have been received.

2.□ Certified copies of the priority documents have been received in Application No. _____.

3.□ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) □ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _03/17/2006_.

4) □ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ .

5) □ Notice of Informal Patent Application

6) □ Other: _____.

DETAILED ACTION

1. This action is responsive to the application filed on 03/17/2006.

2. Claims 1-58 have been examined.

Oath/Declaration

3. The office acknowledges receipt of a properly signed oath/declaration filed on 05/06/2004.

Specification

4. The disclosure is objected to because it contains an embedded hyperlink http://h30097.www3.hp.com/dcpi/ on paragraph [1007]. Applicant is required to delete the embedded hyperlink and/or other form of browser-executable code. See MPEP § 608.01.

Claim Rejections - 35 USC § 101

1. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

2. Claims 1-15 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Claim 1 is non-statutory as being "A software tool" without being supported by hardware such as tangible computer storage or execution engine, which would enable one skill in the art to construe that the software tool is built from tangible product to carry out any functionality being conveyed from the claim. Thus, the software tool is computer listings *per se*, i.e., the descriptions or expressions of the programs, are not physical "things." They are neither computer components nor statutory processes, as they are not "acts" being performed. Such claimed software tool do not define any structural and functional interrelationships between the software tool and other claimed elements of a computer which permit the computer program's functionality to be realized. In contrast, a claimed computer- readable medium encoded with a computer program is a computer element which defines structural and functional interrelationships between the computer program and the rest of the computer which permit the computer program's functionality to be realized, and is thus statutory. See Lowry, 32 F.3d at 1583-84, 32 USPQ2d at 1035. Accordingly, it is important to distinguish claims that define descriptive material per se from claims that define statutory inventions.

Claims 2-15 are rejected for failing to cure the deficiencies of the above rejected non-statutory claim 1 above. See MPEP 2106.01(I).

3. Claims 32, 40, 46 and 47-54 are rejected under 35 U.S.C 101 because the claimed invention is directed to non-statutory subject matter

4. Claims 32, 40, 46 and 47 recite "machine-readable media" defined to include propagated signal e.g. carrier waves, infrared signal etc. (in paragraph [1095]). Thus, under the Interim Guidelines such media do not fall within one of the four statutory classes of 35 U.S.C. 101 (See Annex IV). Therefore, the above claims are non-statutory.

A computer-readable media is a tangible physical article or object, some form of matter, which a signal (infrared)/carrier wave is not. That the other two product classes, machine and composition of matter, require physical matter is evidence that a manufacture was also intended to require physical matter. A signal/carrier wave, a form of energy, does not fall within either of the two definitions of manufacture. Thus, a signal/carrier wave does not fall within one of the four statutory classes of Sec. 101.

See Annex IV (c) Electro-Magnetic Signals, Interim Guidelines for Examination of Patent Applications for Patent Subject Matter Eligibility (signed October 26, 2005) – OG Cite: 1300 OG 142. Online version can be retrieved at
<http://www.uspto.gov/web/offices/com/sol/og/2005/week47/patgupa.htm>
Under the principles of compact prosecution, claims 41-43 have been examined as the Examiner anticipates the claims will be amended to obviate these 35 USC 101 issues. For example, A computer-readable physical storage medium...-

Claims 48-54 are rejected for failing to cure the deficiencies of the above rejected non-statutory claim 47 above.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claims 1-58 are rejected under 35 U.S.C. 102(e) as being anticipated by Yates, Jr. et al. (US 7,111,290 B1), hereinafter Yates.

As per claim 1, Yates discloses a software tool that determines at least one data address from one or more instruction instances (col. 2:15-25 "... figures out the address ..." and col. 7:15-40 "... execution speed ... instance of instruction have an event code that leaves intact an event code previously determined..."), and that identifies one or more memory reference objects, associated with the data address, as hindering execution of code that includes the instruction instances, wherein the instructions instances correspond to the code execution hindrance (col. 6:51-59 "... profile information is recorded that records physical memory reference ..." and col. 7:15-40 "... execution speed ... instance of instruction have an event code that leaves intact an event code previously determined ...").

as per claim 2, Yates discloses the software tool of claim 1 wherein the memory reference objects include one or more of physical memory reference objects and logical memory reference objects (col. 7:14-25 "... physical memory reference ... reference may record the event of a sequential execution flow..." and col. 17:15-20 "... memory references referring to logical address ...).

As per claim 3, Yates discloses the software tool of claim 2 wherein the physical memory reference objects include one or more of cache (e.g. Fig. 1a, 112 and related text), cache lines (col.88: 15-20 ".. cache lines..."), cache levels (e.g. Fig. 1c, DATA CACHE and related text), cache sub-blocks (e.g. Fig. 1c, 112 and related text), memory controllers (e.g. Fig. 1a, 124 and memory modification monitor and related text), addressable memory (e.g. Fig. 1c, 146 and related text), and memory-management page translation units (e.g. Fig. 1a, 170 and related text).

As per claim 4, Yates discloses the software tool of claim 3, wherein the addressable memory includes one or more of virtually addressable memory and physically addressable memory (col. 29: 1-10 "... virtual address ...").

As per claim 5, Yates discloses the software tool of claim 2 wherein the logical memory reference objects include one or more of source-level data objects, memory segments (e.g. Fig. 1D and related text), heap variables (col. 30:40-50 "heap"), variable instances (col. 30:40-50 "state variable"), and stack variables (col. 30:40-50 "stack ").

As per claim 6, Yates discloses the software tool of claim 5 wherein the source-level data objects include one or more of functions (e.g. Fig. 1e and related text), statically linked objects (e.g. Fig. 1e, 56 and related text), data structures (e.g. Fig.1e, 48 and related text), data types (e.g. Fig. 1e, 40 and related text), data type definitions (e.g. Fig. 1e, 32 and related text), operands (e.g. Fig. 3g, 317 and related text), and expressions (e.g. Fig. 3g, 317 and related text).

As per claim 7, Yates discloses the software tool of claim 6 wherein the statically linked objects include one or more of global variables and static variables (e.g. TABLE 1 and related text).

As per 8, Yates discloses the software tool of claim 1 wherein the software tool includes one or more of a compiler, an interpreter (col. 19:20-40 "... interpreter..."), an optimization tool (col.19:20-30 "... emulator..."), and a virtual machine (e.g. Fig. 1a, 118 and related text).

As per claim 9, Yates discloses the software tool of claim 1 wherein the code includes one or more of machine code (e.g. Fig. 1a, 118 and related text), byte code (col.19:20-30 "... emulator..."), and interpreted code (col. 19:20-40 "... interpreter...").

As per claim 10, Yates discloses the software tool of claim 1 that also aggregates addresses based on the memory reference objects (e.g. Fig. 1c and related text).

As per claim 11, Yates discloses the software tool of claim 10 wherein the software tool utilizes at least a portion of the data addresses to aggregate the addresses (e.g. Fig. 1c and related text).

As per claim 12, Yates discloses the software tool of claim 10 that also provides the aggregated addresses and an indication of the code execution hindrance corresponding to the aggregated addresses for one or more of storage and display (e.g. Fig. 1c and related text)..

As per claim 13, Yates discloses the software tool of claim 1 wherein the data address includes a virtual address or a physical address (e.g. Fig. 1d and related text)..

As per claim 14, Yates discloses the software tool of claim 1 wherein the code execution hindrance corresponds to one or more sampled runtime events (e.g. Fig. 1d and related text)..

As per claim 15, Yates discloses the software tool of claim 14 wherein the sampled runtime events include one or more of cache misses, cache references, data translation buffer misses, data translation buffer references, and counter condition events (e.g. Fig. 1b and related text).

As per claim 16, Yates discloses a method for profiling code, the method comprising:

identifying an instruction instance that corresponds to a runtime event col. 6:51-59 "... profile information is recorded that records physical memory reference ..." and col. 7:15-40 "... execution speed ... instance of instruction have an event code that leaves intact an event code previously determined ...");

determining a data address from the instruction instance (col. 2:15-25 "... figures out the address ..."); and

determining a memory reference object from the determined address (col. 7:14-25 "... physical memory reference ... reference may record the event of a sequential execution flow..." and col. 17:15-20 "... memory references referring to logical address ...).

As per claim 17, Yates discloses the method of claim 16 wherein the runtime event is a sampled runtime event (e.g. Fig. 6c, 650 and related text).

As per claim 18, Yates discloses the method of claim 16 wherein identifying the instruction

instance comprises backtracking from a second instruction instance to the instruction instance (e.g. Fig. 650 and related text).

As per claim 19, Yates discloses the method of claim 16 wherein determining the address from the instruction instance comprises decoding the instruction instance (e.g. Fig. 5b, 556 and related text).

20. The method of claim 19 further comprising:

decoding the instruction instance if a register that hosts the instruction instance is determined as valid (e.g. Fig. 5b, 556 and related text).

As per claim 21, Yates discloses the method of claim 20 wherein determining if the register is valid comprises:

applying reverse register transformation with respect to the runtime event (e.g. Fig. 3d and related text); and

determining whether the register is valid based on the applied reverse register transformation (e.g. Fig. 1d and related text).

As per claim 22, Yates discloses the method of claim 16 wherein the memory reference object includes a physical memory reference object or a logical memory reference object (col. 7:14-25 "… physical memory reference … reference may record the event of a sequential execution flow…" and col. 17:15-20 "… memory references referring to logical address …").

As per claim 23, this is the method version of the claimed software tool discussed above (Claim 3), wherein all claim limitations have been addressed and/or covered in cited areas as set forth above. Thus, accordingly, these claims are also anticipated by Yates.

As per claim 24, this is the method version of the claimed software tool discussed above (Claim 4), wherein all claim limitations have been addressed and/or covered in cited areas as set forth above. Thus, accordingly, these claims are also anticipated by Yates.

As per claim 25, this is the method version of the claimed software tool discussed above (Claim 6), wherein all claim limitations have been addressed and/or covered in cited areas as set forth above. Thus, accordingly, these claims are also anticipated by Yates.

As per claim 26, this is the method version of the claimed software tool discussed above (Claim 7), wherein all claim limitations have been addressed and/or covered in cited areas as set forth above. Thus, accordingly, these claims are also anticipated by Yates.

As per claim 27, this is the method version of the claimed software tool discussed above (Claim 8), wherein all claim limitations have been addressed and/or covered in cited areas as set forth above. Thus, accordingly, these claims are also anticipated by Yates.

As per claim 28, this is the method version of the claimed software tool discussed above (Claim 13), wherein all claim limitations have been addressed and/or covered in cited areas as set forth above. Thus, accordingly, these claims are also anticipated by Yates.

As per claim 29, this is the method version of the claimed software tool discussed above (Claim 10), wherein all claim limitations have been addressed and/or covered in cited areas as set forth above. Thus, accordingly, these claims are also anticipated by Yates.

As per claim 30, this is the method version of the claimed software tool discussed above (Claim 11), wherein all claim limitations have been addressed and/or covered in cited areas as set forth above. Thus, accordingly, these claims are also anticipated by Yates.

As per claim 31, this is the method version of the claimed software tool discussed above (Claim 12), wherein all claim limitations have been addressed and/or covered in cited areas as set forth above. Thus, accordingly, these claims are also anticipated by Yates.

As per claim 32, this is the computer program product version of the claimed method discussed above (Claim 16), wherein all claim limitations have been addressed and/or covered in cited areas as set forth above. Thus, accordingly, these claims are also anticipated by Yates.

As per claim 33, Yates discloses a method of profiling code, the method comprising:

associating data addresses with memory reference objects, wherein the data addresses have been determined from instruction instances corresponding to code execution hindrance (col. 2:15-25 "... figures out the address ..."); and

aggregating the data addresses based on their associated memory reference objects (e.g. Fig. 1c and related text).

As per claim 34, this is the method version of the claimed software tool discussed above (Claim 8), wherein all claim limitations have been addressed and/or covered in cited areas as set forth above. Thus, accordingly, these claims are also anticipated by Yates.

As per claim 35, this is the method version of the claimed software tool discussed above (Claim 14), wherein all claim limitations have been addressed and/or covered in cited areas as set forth above. Thus, accordingly, these claims are also anticipated by Yates.

As per claim 36, this is another method version of the claimed method discussed above (Claim 17), wherein all claim limitations have been addressed and/or covered in cited areas as set forth above. Thus, accordingly, these claims are also anticipated by Yates.

As per claim 37, this is another method version of the claimed software tool discussed above (Claim 15), wherein all claim limitations have been addressed and/or covered in cited areas as set forth above. Thus, accordingly, these claims are also anticipated by Yates.

As per claim 38, this is another method version of the claimed software tool discussed above (Claim 13), wherein all claim limitations have been addressed and/or covered in cited areas as set forth above. Thus, accordingly, these claims are also anticipated by Yates.

As per claim 39, this is another method version of the claimed software tool discussed above (Claim 11), wherein all claim limitations have been addressed and/or covered in cited areas as set forth above. Thus, accordingly, these claims are also anticipated by Yates.

As per claim 40, Yates discloses this is the computer program product version of the claimed method discussed above (Claim 33), wherein all claim limitations have been addressed and/or covered in cited areas as set forth above. Thus, accordingly, these claims are also anticipated by Yates.

As per claim 41, Yates discloses a method of profiling code comprising:

identifying an instruction instance corresponding to a runtime event (col. 2:15-25 "... figures out the address ..." and col. 7:15-40 "... execution speed ... instance of instruction have an event code that leaves intact an event code previously determined...");

determining whether the instruction instance is valid (col. 6:51-59 "... profile information is recorded that records physical memory reference ..." and col. 7:15-40 "... execution speed ... instance of instruction have an event code that leaves intact an event code previously determined ...");

decoding the instruction instance to extract at least a portion of a data address(e.g. Fig. 5b, 556 and related text)

if the instruction instance is valid (e.g. Fig. 5b, 556 and related text);

determining a memory reference object with the extracted portion of the address (col. 7:14-25 "... physical memory reference ... reference may record the event of a sequential execution flow..." and col. 17:15-20 "... memory references referring to logical address ...); and

aggregating the data address with other addresses based at least in part on the memory reference object (e.g. Fig. 1c and related text).

As per claim 42, this is another method version of the claimed software tool discussed above (Claim 10), wherein all claim limitations have been addressed and/or covered in cited areas as set forth above. Thus, accordingly, these claims are also anticipated by Yates.

As per claim 43, this is another method version of the claimed software tool discussed above (Claim 13), wherein all claim limitations have been addressed and/or covered in cited areas as set forth above. Thus, accordingly, these claims are also anticipated by Yates.

As per claim 44, this is another method version of the claimed software tool discussed above (Claim 14), wherein all claim limitations have been addressed and/or covered in cited areas as set forth above. Thus, accordingly, these claims are also anticipated by Yates.

As per claim 45, this is another method version of the claimed method discussed above (Claim 21), wherein all claim limitations have been addressed and/or covered in cited areas as set forth above. Thus, accordingly, these claims are also anticipated by Yates.

As per claim 46, this is the computer program product version of the claimed method discussed above (Claim 41), wherein all claim limitations have been addressed and/or covered in cited areas as set forth above. Thus, accordingly, these claims are also anticipated by Yates.

As per claim 47, this is the computer program product version of the claimed method discussed above (Claim 41), wherein all claim limitations have been addressed and/or covered in cited areas as set forth above. Thus, accordingly, these claims are also anticipated by Yates.

As per claim 48, this is the computer program product version of the claimed method discussed above (Claim 42), wherein all claim limitations have been addressed and/or covered in cited areas as set forth above. Thus, accordingly, these claims are also anticipated by Yates.

As per claim 49, this is the computer program product version of the claimed method discussed above (Claim 45), wherein all claim limitations have been addressed and/or covered in cited areas as set forth above. Thus, accordingly, these claims are also anticipated by Yates.

As per claim 50, this is the computer program product version of the claimed software tool discussed above (Claim 13), wherein all claim limitations have been addressed and/or covered in cited areas as set forth above. Thus, accordingly, these claims are also anticipated by Yates.

As per claim 51, this is the computer program product version of the claimed software tool discussed above (Claim 15), wherein all claim limitations have been addressed and/or covered in cited areas as set forth above. Thus, accordingly, these claims are also anticipated by Yates.

As per claim 52, this is the computer program product version of the claimed software tool discussed above (Claim 5), wherein all claim limitations have been addressed and/or covered in cited areas as set forth above. Thus, accordingly, these claims are also anticipated by Yates.

As per claim 53, this is the computer program product version of the claimed software tool discussed above (Claim 6), wherein all claim limitations have been addressed and/or covered in cited areas as set forth above. Thus, accordingly, these claims are also anticipated by Yates.

As per claim 54, this is computer program product version of the claimed software tool discussed above (Claim 7), wherein all claim limitations have been addressed and/or covered in cited areas as set forth above. Thus, accordingly, these claims are also anticipated by Yates.

As per claim 55, this is the apparatus version of the claimed method discussed above (Claim 41), wherein all claim limitations have been addressed and/or covered in cited areas as set forth above. Thus, accordingly, these claims are also anticipated by Yates.

As per claim 56, this is the apparatus version of the claimed method discussed above (Claim 42), wherein all claim limitations have been addressed and/or covered in cited areas as set forth above. Thus, accordingly, these claims are also anticipated by Yates.

As per claim 57, this is apparatus version of the claimed software tool discussed above (Claim 5), wherein all claim limitations have been addressed and/or covered in cited areas as set forth above. Thus, accordingly, these claims are also anticipated by Yates.

As per claim 58, Yates discloses the apparatus of claim 56 wherein the processor includes event condition counters (col. 2:15-25 "... counters will indicates ...").

Conclusion

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Isaac T. Tecklu whose telephone number is (571) 272-7957. The examiner can normally be reached on M-TH 9:300A - 8:00P.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tuan Q. Dam can be reached on (571) 272-3695. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Isaac Tecklu
Art Unit 2192

TUAN DAM
SUPERVISORY PATENT EXAMINER